

## Attachment A. GWSCREEN Output Files

Scenario 1. 20 year release using HSSM source geometry

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*****
*           GWRUN.BAS
*   This program is a shell for
*   GWSCREEN to make multiple runs
*   For GWSCREEN Version 2.03 ONLY
*   A. S. Rood 01-11-95
*****

*****
* RUN NUMBER 1 *
*****
TIME OF RUN 01:33:05.0
DATE OF RUN 07/06/95
INPUT FILE NAME: GWSCREEN.PAR
OUTPUT FILE NAME: GWSCREEN.OUT
=====
                ACKNOWLEDGEMENT OF GOVERNMENT SPONSORSHIP AND
                LIMITATION OF LIABILITY

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DOE Field Office, Idaho, Contract Number DE-AC07-76ID01570.
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Cambridge University Press.
=====

*****
*
*   This output was produced by the model:
*
*   Version Control Copy, Version 2.03
*   A semi-analytical model for the assessment
*   of the groundwater pathway from the leaching
*   of surficial and buried contamination and
*   release of contaminants from percolation ponds
*   03-08-94
*   Arthur S. Rood
*   Idaho National Engineering Laboratory
*   EG&G Idaho Inc.
*   Subsurface and Environmental Modeling Unit
*   PO Box 1625
*   Idaho Falls, Idaho 83415
*****

>>> TITLE OF PROJECT:
PBE-742: Benzene      20 year release HSSM release parameters
=====
GAUSSIAN QUADRATURE SOLUTION
MODEL OPTIONS
IMODE: 4
KFLAG: 1 (0)CONC VS TIME; (1)PEAK CONC AND LIMITING SOIL CONC
IMODEL:1 (1) SURF OR BURIED SOURCE; (2)POND SOURCE; (3) TABULATED SOURCE
>>> INPUT DATA
*****
NUMBER OF RADIOACTIVE PROGENY          0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)  4.75E+02
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)  4.75E+02
THICKNESS OF SOURCE (m)  5.40E-03
PERCOLATION RATE (darcy vel m/y)  1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE  3.00E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE  3.00E-01
BULK DENSITY AT SOURCE (g/cm**3)  1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)  2.50E-01
BULK DENSITY IN UNSAT ZONE (g/cm**3)  1.90E+00
UNSATURATED ZONE THICKNESS (m)  4.00E+01
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)  2.50E-01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**-1)  0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)  1.14E+07
MOLECULAR WEIGHT (g/mole)  1.00E+02
SOLUBILITY LIMIT (mg/L)  1.75E+03
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)  2.00E+00
BULK DENSITY OF AQUIFER (g/cm**3)  1.90E+00
POROSITY OF AQUIFER  1.00E-01

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SORPTION COEFFICIENT(S) IN AQUIFER (ml/g) 2.50E-01  
 DISPERSIVITY X DIRECTION (m) 9.00E+00  
 DISPERSIVITY Y DIRECTION (m) 4.00E+00  
 PORE VELOCITY (m/y) 5.70E+02  
 WELL SCREEN THICKNESS (m) 1.50E+01  
 DISTANCE TO RECEPTOR ALONG X AXIS (m) 2.37E+02  
 DISTANCE TO RECEPTOR ALONG Y AXIS (m) 0.00E+00  
 LIMITING CONTAMINANT GW CONCENTRATION (mg/L) 8.00E-04  
 UNITS OF CONTAMINANT mg

INPUT DATA FILE CREATED BY: \_\_\_\_\_ DATE / /

INPUT DATA CHECKED BY: \_\_\_\_\_ DATE / /

-----  
 LIMITING SOIL CONCENTRATION CALCULATION  
 >>> VALUES CALCULATED IN SOURCE SUBROUTINE

\*\*\*\*\*  
 LEACH RATE CONSTANT (1/y) 2.7435E+01  
 UNSATURATED PORE VELOCITY (m/y) 3.3333E-01  
 DECAY CONSTANT(S) (1/y) 3.4657E-01  
 RETARDATION FACTOR(S) (SATURATED) 5.7500E+00  
 RETARDATION FACTOR (UNSATURATED) 2.5833E+00  
 SOLUBILITY LIMITED MASS (mg) 1.4392E+09  
 SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00  
 TRANSIT TIME IN UNSAT ZONE (years) 3.1000E+02  
 FRACTION DECAYED DURING UNSAT TRANSPORT 1.0000E+00  
 -----

>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION

\*\*\*\*\*  
 INTEGRATION TIME (years) 30  
 BODY WEIGHT (kg) 7.000E+01  
 AVERAGING TIME (days) 1.095E+04  
 WATER INTAKE RATE (L/d) 2.000E+00  
 EXPOSURE FREQUENCY (days/year) 3.500E+02  
 EXPOSURE DURATION (years) 3.000E+01  
 RADIOLOGICAL DOSE LIMIT (rem/y) 1.000E-04  
 CARCINOGENIC RISK CRITERIA 1.000E-06  
 HAZARD QUOTIENT 1.000E+00  
 -----

>>> RESULTS OF CALCULATIONS

\*\*\*\*\*  
 MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION  
 MAXIMUM CONCENTRATION 1.03E-49 mg/L  
 AVERAGE CONCENTRATION 9.57E-51 mg/L  
 PEAK TIME (y): 3.103687E+02  
 LIMITING SOIL CONCENTRATION (mg/m\*\*3): 7.804E+50  
 LIMITING SOIL CONCENTRATION (mg/kg): 5.203E+47  
 LIMITING INVENTORY IN SOIL (mg): 9.509E+53  
 WARNING !!! THE LIMITING SOIL MASS OF 9.509E+53 mg  
 EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 1.439E+09 mg  
 EXECUTION TIME (seconds) 1  
 \*\*\*\*\*

\* RUN NUMBER 2 \*  
 \*\*\*\*\*

TITLE: PBF-752: Benzene  
 AL 8.300E+02  
 WA 8.300E+02  
 XD 4.150E+02  
 QI 3.469E+07

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

\*\*\*\*\*  
 LEACH RATE CONSTANT (1/y) 2.7435E+01  
 UNSATURATED PORE VELOCITY (m/y) 3.3333E-01  
 DECAY CONSTANT(S) (1/y) 3.4657E-01  
 RETARDATION FACTOR(S) (SATURATED) 5.7500E+00  
 RETARDATION FACTOR (UNSATURATED) 2.5833E+00  
 SOLUBILITY LIMITED MASS (mg) 4.3943E+09  
 SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00  
 TRANSIT TIME IN UNSAT ZONE (years) 3.1000E+02  
 FRACTION DECAYED DURING UNSAT TRANSPORT 1.0000E+00  
 -----

>>> RESULTS OF CALCULATIONS

\*\*\*\*\*  
 MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION  
 MAXIMUM CONCENTRATION 1.02E-49 mg/L  
 AVERAGE CONCENTRATION 1.12E-50 mg/L  
 PEAK TIME (y): 3.103787E+02  
 LIMITING SOIL CONCENTRATION (mg/m\*\*3): 6.679E+50  
 LIMITING SOIL CONCENTRATION (mg/kg): 4.453E+47  
 LIMITING INVENTORY IN SOIL (mg): 2.485E+54  
 WARNING !!! THE LIMITING SOIL MASS OF 2.485E+54 mg  
 EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 4.394E+09 mg  
 EXECUTION TIME (seconds) 1  
 \*\*\*\*\*

\* RUN NUMBER 3 \*  
 \*\*\*\*\*

TITLE: PBF-742: Toluene  
 AL 4.750E+02  
 WA 4.750E+02

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XD          2.370E+02
ZKDS        9.000E-01
ZKDU        9.000E-01
ZKDA        9.000E-01
QI          2.846E+08
DF          1.000E+00
SL          5.350E+02
THALF       1.000E-01
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y)          1.1223E+01
UNSATURATED PORE VELOCITY (m/y)    3.3333E-01
DECAY CONSTANT(S) (1/y)            6.9315E+00
RETARDATION FACTOR(S) (SATURATED)  1.8100E+01
RETARDATION FACTOR (UNSATURATED)   6.7000E+00
SOLUBILITY LIMITED MASS (mg)        1.0755E+09
SOLUBILITY LIMITED ACTIVITY (Ci)     0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)   8.0400E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 1.0000E+00
-----
>>> RESULTS OF CALCULATIONS
*****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 7.42-220 mg/L
AVERAGE CONCENTRATION 8.82-222 mg/L
PEAK TIME (y): 8.040908E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 2.650+226
LIMITING SOIL CONCENTRATION (mg/kg): 1.766+223
LIMITING INVENTORY IN SOIL (mg): 3.228+229
WARNING !!! THE LIMITING SOIL MASS OF 3.228+229 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 1.076E+09 mg
EXECUTION TIME (seconds) 3
*****
* RUN NUMBER 4 *
*****
TITLE: PBF-752:Toluene
QI 8.674E+08
AL 8.300E+02
WA 8.300E+02
XD 4.150E+02
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y)          1.1223E+01
UNSATURATED PORE VELOCITY (m/y)    3.3333E-01
DECAY CONSTANT(S) (1/y)            6.9315E+00
RETARDATION FACTOR(S) (SATURATED)  1.8100E+01
RETARDATION FACTOR (UNSATURATED)   6.7000E+00
SOLUBILITY LIMITED MASS (mg)        3.2839E+09
SOLUBILITY LIMITED ACTIVITY (Ci)     0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)   8.0400E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 1.0000E+00
-----
>>> RESULTS OF CALCULATIONS
*****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 6.92-220 mg/L
AVERAGE CONCENTRATION 8.44-222 mg/L
PEAK TIME (y): 8.040959E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 2.763+226
LIMITING SOIL CONCENTRATION (mg/kg): 1.842+223
LIMITING INVENTORY IN SOIL (mg): 1.028+230
WARNING !!! THE LIMITING SOIL MASS OF 1.028+230 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 3.284E+09 mg
EXECUTION TIME (seconds) 3
*****
* RUN NUMBER 5 *
*****
TITLE: PBF-742:Ethylbenzene
AL 4.750E+02
WA 4.750E+02
XD 2.370E+02
ZKDS 3.300E+00
ZKDU 3.300E+00
ZKDA 3.300E+00
QI 2.846E+08
DF 2.000E+00
SL 1.520E+02
THALF 1.000E+00
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y)          3.5273E+00
UNSATURATED PORE VELOCITY (m/y)    3.3333E-01
DECAY CONSTANT(S) (1/y)            6.9315E-01
RETARDATION FACTOR(S) (SATURATED)  6.3700E+01
RETARDATION FACTOR (UNSATURATED)   2.1900E+01
SOLUBILITY LIMITED MASS (mg)        9.7226E+08
SOLUBILITY LIMITED ACTIVITY (Ci)     0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)   2.6280E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 1.0000E+00
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>>> RESULTS OF CALCULATIONS
*****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 3.78-220 mg/L
AVERAGE CONCENTRATION 2.93-221 mg/L
PEAK TIME (y): 2.628587E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 1.592+226
LIMITING SOIL CONCENTRATION (mg/kg): 1.061+223
LIMITING INVENTORY IN SOIL (mg): 1.940+229
WARNING !!! THE LIMITING SOIL MASS OF 1.940+229 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 9.723E+08 mg
EXECUTION TIME (seconds) 2
*****
* RUN NUMBER 6 *
*****
TITLE: PBF-752:Ethylbenzene
AL 8.300E+02
WA 8.300E+02
XD 4.150E+02
QI 8.674E+08
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y) 3.5273E+00
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 6.9315E-01
RETARDATION FACTOR(S) (SATURATED) 6.3700E+01
RETARDATION FACTOR (UNSATURATED) 2.1900E+01
SOLUBILITY LIMITED MASS (mg) 2.9686E+09
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 2.6280E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 1.0000E+00
-----
>>> RESULTS OF CALCULATIONS
*****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 3.63-220 mg/L
AVERAGE CONCENTRATION 2.86-221 mg/L
PEAK TIME (y): 2.628617E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 1.633+226
LIMITING SOIL CONCENTRATION (mg/kg): 1.089+223
LIMITING INVENTORY IN SOIL (mg): 6.076+229
WARNING !!! THE LIMITING SOIL MASS OF 6.076+229 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 2.969E+09 mg
EXECUTION TIME (seconds) 2
*****
* RUN NUMBER 7 *
*****
TITLE: PBF-742:XYLENE
AL 4.750E+02
WA 4.750E+02
XD 2.370E+02
ZKDS 7.200E-01
ZKDU 7.200E-01
ZKDA 7.200E-01
DF 8.000E-01
QI 2.846E+08
SL 1.980E+02
THALF 1.000E+00
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y) 1.3419E+01
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 6.9315E-01
RETARDATION FACTOR(S) (SATURATED) 1.4680E+01
RETARDATION FACTOR (UNSATURATED) 5.5600E+00
SOLUBILITY LIMITED MASS (mg) 3.3291E+08
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 6.6720E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 1.0000E+00
-----
>>> RESULTS OF CALCULATIONS
*****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 5.00-203 mg/L
AVERAGE CONCENTRATION 3.38-204 mg/L
PEAK TIME (y): 6.675210E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 5.532+208
LIMITING SOIL CONCENTRATION (mg/kg): 3.688+205
LIMITING INVENTORY IN SOIL (mg): 6.740+211
WARNING !!! THE LIMITING SOIL MASS OF 6.740+211 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 3.329E+08 mg
EXECUTION TIME (seconds) 1
*****
* RUN NUMBER 8 *
*****
TITLE: PBF-752:XYLENE
AL 8.300E+02
WA 8.300E+02
XD 4.150E+02
QI 8.674E+08

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>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y) 1.3419E+01
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 6.9315E-01
RETARDATION FACTOR(S) (SATURATED) 1.4680E+01
RETARDATION FACTOR (UNSATURATED) 5.5600E+00
SOLUBILITY LIMITED MASS (mg) 1.0165E+09
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 6.6720E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 1.0000E+00
-----
>>> RESULTS OF CALCULATIONS
*****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 4.91-203 mg/L
AVERAGE CONCENTRATION 3.35-204 mg/L
PEAK TIME (y): 6.675369E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 5.574+208
LIMITING SOIL CONCENTRATION (mg/kg): 3.716+205
LIMITING INVENTORY IN SOIL (mg): 2.074+212
WARNING !!! THE LIMITING SOIL MASS OF 2.074+212 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 1.016E+09 mg
EXECUTION TIME (seconds) 2

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*****
* RUN NUMBER 9 *
*****

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TITLE: PBF-742:NAPHTHALENE
KFLAG 0.000E+00
AL 4.750E+02
WA 4.750E+02
XD 2.370E+02
ZKDS 3.900E+00
ZKDU 3.900E+00
ZKDA 3.900E+00
DF 1.000E+00
QI 3.415E+08
SL 3.170E+01
THALF 0.000E+00

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```

>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y) 3.0111E+00
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 7.5100E+01
RETARDATION FACTOR (UNSATURATED) 2.5700E+01
SOLUBILITY LIMITED MASS (mg) 2.3753E+08
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 3.0840E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00
-----
>>> RESULTS OF CALCULATIONS
*****

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>>> CONCENTRATION VS TIME MODE

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TIME (years)	CUMULATIVE SOURCE FLUX (mg)	CUMULATIVE AQUIFER FLUX (mg)	AQUIFER FLUX (mg/year)	GW CONC ... member #1 (mg/m**3)
2.9500E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
2.9600E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
2.9700E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
2.9800E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
2.9900E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0000E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0100E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0200E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0300E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0400E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0500E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0600E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0700E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0800E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0900E+03	3.4150E+08	3.4150E+08	1.5784E+01	1.2622E+01
3.1000E+03	3.4150E+08	3.4150E+08	1.3213E-12	1.3313E+01
3.1100E+03	3.4150E+08	3.4150E+08	1.1061E-25	1.3540E+01
3.1200E+03	3.4150E+08	3.4150E+08	9.2588E-39	1.3324E+01
3.1300E+03	3.4150E+08	3.4150E+08	7.7506E-52	1.2534E+01
3.1400E+03	3.4150E+08	3.4150E+08	6.4881E-65	9.5646E+00
3.1500E+03	3.4150E+08	3.4150E+08	5.4312E-78	5.3028E+00

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AVERAGE INTEGRATED CONCENTRATION FROM 2.9500E+03 TO 3.1500E+03 YEARS = 4.19E+00 mg/m**3
MAXIMUM CONCENTRATION(S) mg/m**3

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1.35E+01
TIME(S) OF MAXIMUM CONCENTRATIONS (years)
3.11E+03
EXECUTION TIME (seconds) 0

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*****
* RUN NUMBER 10 *
*****

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TITLE: PBF-752:NAPHTHALENE

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AL      8.300E+02
WA      8.300E+02
XD      4.150E+02
QI      1.041E+09
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y)      3.0111E+00
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y)      0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 7.5100E-01
RETARDATION FACTOR (UNSATURATED) 2.5700E+01
SOLUBILITY LIMITED MASS (mg)   7.2524E+08
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 3.0840E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00
-----
>>> RESULTS OF CALCULATIONS
*****
>>> CONCENTRATION VS TIME MODE

```

TIME (years)	CUMULATIVE SOURCE FLUX (mg)	CUMULATIVE AQUIFER FLUX (mg)	AQUIFER FLUX (mg/year)	GW CONC ... member #1 (mg/m**3)
2.9500E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
2.9600E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
2.9700E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
2.9800E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
2.9900E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0000E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0100E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0200E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0300E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0400E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0500E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0600E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0700E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0800E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0900E+03	1.0410E+09	1.0410E+09	4.8080E+01	1.2572E+01
3.1000E+03	1.0410E+09	1.0410E+09	4.0248E-12	1.3290E+01
3.1100E+03	1.0410E+09	1.0410E+09	3.3692E-25	1.3513E+01
3.1200E+03	1.0410E+09	1.0410E+09	2.8204E-38	1.3323E+01
3.1300E+03	1.0410E+09	1.0410E+09	2.3609E-51	1.3209E+01
3.1400E+03	1.0410E+09	1.0410E+09	1.9764E-64	1.3170E+01
3.1500E+03	1.0410E+09	1.0410E+09	1.6544E-77	1.3202E+01

```

AVERAGE INTEGRATED CONCENTRATION FROM 2.9500E+03 TO 3.1500E+03 YEARS = 7.37E+00 mg/m**3
MAXIMUM CONCENTRATION(S) mg/m**3
1.35E+01
TIME(S) OF MAXIMUM CONCENTRATIONS (years)
3.11E+03
EXECUTION TIME (seconds) 0
*****
* RUN NUMBER 11 *
*****
TITLE: PBF-742:METHYLNAPHTHALENE
KFLAG 1.000E+00
AL 4.750E+02
WA 4.750E+02
XD 2.370E+02
ZKDS 2.550E+01
ZKDU 2.550E+01
ZKDA 2.550E+01
DF 1.000E+00
QI 8.537E+09
SL 2.540E+01
THALF 0.000E+00
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y)      4.8038E-01
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y)      0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 4.8550E+02
RETARDATION FACTOR (UNSATURATED) 1.6250E+02
SOLUBILITY LIMITED MASS (mg)   1.1930E+09
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 1.9500E+04
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00
-----
>>> RESULTS OF CALCULATIONS
*****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 5.19E-03 mg/L
AVERAGE CONCENTRATION 5.19E-03 mg/L
PEAK TIME (y): 1.969558E+04
LIMITING SOIL CONCENTRATION (mg/m**3): 1.349E+08
LIMITING SOIL CONCENTRATION (mg/kg): 8.993E+04
LIMITING INVENTORY IN SOIL (mg): 1.644E+11
WARNING !!! THE LIMITING SOIL MASS OF 1.644E+11 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 1.193E+09 mg
EXECUTION TIME (seconds) 1

```

```

*****
* RUN NUMBER 12 *
*****
TITLE: PBF-752:METHYLNAPHTHALENE
AL      8.300E+02
WA      9.300E+02
XD      4.150E+02
QI      2.602E+03
SL      2.540E+01
THALF   0.000E+00
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y)      4.8038E-01
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y)      0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 4.8550E+02
RETARDATION FACTOR (UNSATURATED) 1.6250E+02
SOLUBILITY LIMITED MASS (mg)   3.6426E+09
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 1.9500E+04
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00
-----
>>> RESULTS OF CALCULATIONS
*****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 5.19E-03 mg/L
AVERAGE CONCENTRATION 5.19E-03 mg/L
PEAK TIME (y): 1.984720E+04
LIMITING SOIL CONCENTRATION (mg/m**3): 1.349E+08
LIMITING SOIL CONCENTRATION (mg/kg): 8.991E+04
LIMITING INVENTORY IN SOIL (mg): 5.017E+11
WARNING !!! THE LIMITING SOIL MASS OF 5.017E+11 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 3.643E+09 mg
EXECUTION TIME (seconds) 1
*****
* RUN NUMBER 13 *
*****

```

Scenario 2. 20 year release using DragunSource geometry

```

*****
* GWRUN.BAS
* This program is a shell for
* GWSCREEN to make multiple runs
* For GWSCREEN Version 2.03 ONLY
* A. S. Rood 01-11-95
*****
*****
* RUN NUMBER 1 *
*****
TIME OF RUN 00:49:37.2
DATE OF RUN 07/06/95
INPUT FILE NAME: GWSCREEN.PAR
OUTPUT FILE NAME: GWSCREEN.OUT
=====
ACKNOWLEDGEMENT OF GOVERNMENT SPONSORSHIP AND
LIMITATION OF LIABILITY

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Energy, Office of Environmental Restoration and Waste Management,
DOE Field Office, Idaho, Contract Number DE-AC07-76ID01570.
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QSIMP, QGAUS, and TRAP2D are Copyright (C) 1992, Numerical Recipes
Software. Reproduced by permission from the book, Numerical Recipes,
Cambridge University Press.
=====

*****
* This output was produced by the model:
*
* GWSCREEN
* Version Control Copy, Version 2.03
* A semi-analytical model for the assessment
* of the groundwater pathway from the leaching
* of surficial and buried contamination and
* release of contaminants from percolation ponds
* 03-08-94
* Arthur S. Rood
* Idaho National Engineering Laboratory
* EG&G Idaho Inc.
*

```

\* Subsurface and Environmental Modeling Unit \*

PO Box 1625  
Idaho Falls, Idaho 83415

>>> TITLE OF PROJECT: 20 year release Dragon release parameters

GAUSSIAN QUADRATURE SOLUTION  
MODEL OPTIONS

IMODE: 4  
KFLAG: 1 (0) CONC VS TIME; (1) PEAK CONC AND LIMITING SOIL CONC  
IMODEL: 1 (1) SURF OR BURIED SOURCE; (2) POND SOURCE; (3) TABULATED SOURCE  
>>> INPUT DATA

NUMBER OF RADIOACTIVE PROGENY	0
LENGTH OF SOURCE PARALLEL TO GW FLOW (m)	1.05E+02
WIDTH OF SOURCE PERPENDICULAR TO GW FLOW (m)	1.05E+02
THICKNESS OF SOURCE (m)	7.69E-02
PERCOLATION RATE (darcy vel m/y)	1.00E-01
VOLUMETRIC WATER CONTENT IN SOURCE	3.00E-01
VOLUMETRIC WATER CONTENT IN UNSATURATED ZONE	3.00E-01
BULK DENSITY AT SOURCE (g/cm**3)	1.50E+00
SORPTION COEFFICIENT AT SOURCE (ml/g)	2.50E-01
BULK DENSITY IN UNSAT ZONE (g/cm**3)	1.90E+00
UNSATURATED ZONE THICKNESS (m)	4.00E+01
SORPTION COEFFICIENT IN UNSAT ZONE (ml/g)	2.50E-01
OPTIONAL LOSS RATE CONSTANT FOR SOURCE (y**--1)	0.00E+00
INITIAL MASS OR ACTIVITY (mg or Ci)	1.14E+07
MOLECULAR WEIGHT (g/mole)	1.00E+02
SOLUBILITY LIMIT (mg/L)	1.75E+03
HALF-LIFE(S) OF CONTAMINANT AND PROGENY (y)	2.00E+00
BULK DENSITY OF AQUIFER (g/cm**3)	1.90E+00
POROSITY OF AQUIFER	1.00E-01
SORPTION COEFFICIENT(S) IN AQUIFER (ml/g)	2.50E-01
DISPERSIVITY X DIRECTION (m)	9.00E+00
DISPERSIVITY Y DIRECTION (m)	4.00E+00
PORE VELOCITY (m/y)	5.70E+02
WELL SCREEN THICKNESS (m)	1.50E+01
DISTANCE TO RECEPTOR ALONG X AXIS (m)	5.30E+01
DISTANCE TO RECEPTOR ALONG Y AXIS (m)	0.00E+00
LIMITING CONTAMINANT GW CONCENTRATION (mg/L)	8.00E-04
UNITS OF CONTAMINANT	mg

INPUT DATA FILE CREATED BY: \_\_\_\_\_ DATE / /

INPUT DATA CHECKED BY: \_\_\_\_\_ DATE / /

LIMITING SOIL CONCENTRATION CALCULATION  
>>> VALUES CALCULATED IN SOURCE SUBROUTINE

LEACH RATE CONSTANT (1/y)	1.9265E+00
UNSATURATED PORE VELOCITY (m/y)	3.3333E-01
DECAY CONSTANT(S) (1/y)	3.4657E-01
RETARDATION FACTOR(S) (SATURATED)	5.7500E+00
RETARDATION FACTOR (UNSATURATED)	2.5833E+00
SOLUBILITY LIMITED MASS (mg)	1.0015E+09
SOLUBILITY LIMITED ACTIVITY (Ci)	0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)	3.1000E+02
FRACTION DECAYED DURING UNSAT TRANSPORT	1.0000E+00

>>> EXPOSURE DATA FOR LIMITING SOIL CONCENTRATION

INTEGRATION TIME (years)	30
BODY WEIGHT (kg)	7.000E+01
AVERAGING TIME (days)	1.095E+04
WATER INTAKE RATE (L/d)	2.000E+00
EXPOSURE FREQUENCY (days/year)	3.500E+02
EXPOSURE DURATION (years)	3.000E+01
RADIOLOGICAL DOSE LIMIT (rem/y)	1.000E-04
CARCINOGENIC RISK CRITERIA	1.000E-06
HAZARD QUOTIENT	1.000E+00

>>> RESULTS OF CALCULATIONS

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION

MAXIMUM CONCENTRATION	1.31E-48 mg/L
AVERAGE CONCENTRATION	6.05E-50 mg/L
PEAK TIME (y):	3.107421E+02
LIMITING SOIL CONCENTRATION (mg/m**3):	1.776E+50
LIMITING SOIL CONCENTRATION (mg/kg):	1.184E+47
LIMITING INVENTORY IN SOIL (mg):	1.506E+53
WARNING !!! THE LIMITING SOIL MASS OF 1.506E+53 mg	
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 1.001E+09 mg	
EXECUTION TIME (seconds)	1

\*\*\*\*\*  
\* RUN NUMBER 2 \*  
\*\*\*\*\*

TITLE: PBF-752: Benzene  
AL 1.730E+02



```

WA          1.730E+02
XD          8.700E+01
THICKS      8.690E-02
QI          3.469E+07
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y)          1.7048E+00
UNSATURATED PORE VELOCITY (m/y)    3.3333E-01
DECAY CONSTANT(S) (1/y)            3.4657E-01
RETARDATION FACTOR(S) (SATURATED)  5.7500E+00
RETARDATION FACTOR (UNSATURATED)   2.5833E+00
SOLUBILITY LIMITED MASS (mg)        3.0722E+09
SOLUBILITY LIMITED ACTIVITY (Ci)     0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)  3.1000E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 1.0000E+00
-----
>>> RESULTS OF CALCULATIONS
*****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 1.59E-48 mg/L
AVERAGE CONCENTRATION 1.00E-49 mg/L
PEAK TIME (y): 3.110446E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 1.065E+50
LIMITING SOIL CONCENTRATION (mg/kg): 7.103E+46
LIMITING INVENTORY IN SOIL (mg): 2.771E+53
WARNING !!! THE LIMITING SOIL MASS OF 2.771E+53 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 3.072E+09 mg
EXECUTION TIME (seconds) 1
*****
* RUN NUMBER 3 *
*****
TITLE: PBF-742:Toluene
AL          1.730E+02
WA          1.730E+02
XD          8.700E+01
THICKS      7.690E-02
ZKDS        9.000E-01
ZKDU        9.000E-01
ZKDA        9.000E-01
QI          2.846E+08
DF          1.000E+00
SL          5.350E+02
THALF       1.000E-01
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y)          7.8812E-01
UNSATURATED PORE VELOCITY (m/y)    3.3333E-01
DECAY CONSTANT(S) (1/y)            6.9315E+00
RETARDATION FACTOR(S) (SATURATED)  1.8100E+01
RETARDATION FACTOR (UNSATURATED)   6.7000E+00
SOLUBILITY LIMITED MASS (mg)        2.0317E+09
SOLUBILITY LIMITED ACTIVITY (Ci)     0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)  8.0400E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 1.0000E+00
-----
>>> RESULTS OF CALCULATIONS
*****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 5.85-220 mg/L
AVERAGE CONCENTRATION 8.87-222 mg/L
PEAK TIME (y): 8.041567E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 1.395+226
LIMITING SOIL CONCENTRATION (mg/kg): 9.298+222
LIMITING INVENTORY IN SOIL (mg): 3.210+229
WARNING !!! THE LIMITING SOIL MASS OF 3.210+229 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 2.032E+09 mg
EXECUTION TIME (seconds) 1
*****
* RUN NUMBER 4 *
*****
TITLE: PBF-752:Toluene
QI          8.674E+08
AL          1.730E+02
WA          1.730E+02
XD          8.700E+01
THICKS      8.690E-02
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y)          6.9742E-01
UNSATURATED PORE VELOCITY (m/y)    3.3333E-01
DECAY CONSTANT(S) (1/y)            6.9315E+00
RETARDATION FACTOR(S) (SATURATED)  1.8100E+01
RETARDATION FACTOR (UNSATURATED)   6.7000E+00
SOLUBILITY LIMITED MASS (mg)        2.2959E+09
SOLUBILITY LIMITED ACTIVITY (Ci)     0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)  8.0400E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 1.0000E+00
-----
>>> RESULTS OF CALCULATIONS
*****

```

```

MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 1.59-219 mg/L
AVERAGE CONCENTRATION 2.41-221 mg/L
PEAK TIME (y): 8.041576E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 1.382+226
LIMITING SOIL CONCENTRATION (mg/kg): 9.213+222
LIMITING INVENTORY IN SOIL (mg): 3.594+229
WARNING !!! THE LIMITING SOIL MASS OF 3.594+229 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 2.296E+09 mg
EXECUTION TIME (seconds) 1

```

```

*****
* RUN NUMBER 5 *
*****

```

TITLE: PBF-742:Ethylbenzene

```

AL 1.050E+02
WA 1.050E+02
THICKS 7.690E-02
XD 5.300E+01
ZKDS 3.300E+00
ZKDU 3.300E+00
ZKDA 3.300E+00
QI 2.846E+08
DF 2.000E+00
SL 1.520E+02
THALF 1.000E+00

```

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

```

*****
LEACH RATE CONSTANT (1/y) 2.4769E-01
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 6.9315E-01
RETARDATION FACTOR(S) (SATURATED) 6.3700E+01
RETARDATION FACTOR (UNSATURATED) 2.1900E+01
SOLUBILITY LIMITED MASS (mg) 6.7656E+08
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 2.6280E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 1.0000E+00
-----

```

>>> RESULTS OF CALCULATIONS

```

*****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 1.48-219 mg/L
AVERAGE CONCENTRATION 1.79-220 mg/L
PEAK TIME (y): 2.629439E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 3.756+225
LIMITING SOIL CONCENTRATION (mg/kg): 2.504+222
LIMITING INVENTORY IN SOIL (mg): 3.184+228
WARNING !!! THE LIMITING SOIL MASS OF 3.184+228 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 6.766E+08 mg
EXECUTION TIME (seconds) 1

```

```

*****
* RUN NUMBER 6 *
*****

```

TITLE: PBF-752:Ethylbenzene

```

AL 1.730E+02
WA 1.730E+02
XD 8.700E+01
THICKS 8.690E-02
QI 8.674E+08

```

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

```

*****
LEACH RATE CONSTANT (1/y) 2.1919E-01
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 6.9315E-01
RETARDATION FACTOR(S) (SATURATED) 6.3700E+01
RETARDATION FACTOR (UNSATURATED) 2.1900E+01
SOLUBILITY LIMITED MASS (mg) 2.0755E+09
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 2.6280E+03
FRACTION DECAYED DURING UNSAT TRANSPORT 1.0000E+00
-----

```

>>> RESULTS OF CALCULATIONS

```

*****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 1.50-219 mg/L
AVERAGE CONCENTRATION 1.84-220 mg/L
PEAK TIME (y): 2.629461E+03
LIMITING SOIL CONCENTRATION (mg/m**3): 3.625+225
LIMITING SOIL CONCENTRATION (mg/kg): 2.417+222
LIMITING INVENTORY IN SOIL (mg): 9.427+228
WARNING !!! THE LIMITING SOIL MASS OF 9.427+228 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 2.075E+09 mg
EXECUTION TIME (seconds) 1

```

```

*****
* RUN NUMBER 7 *
*****

```

TITLE: PBF-742:XYLENE

```

AL 1.050E+02
WA 1.050E+02
THICKS 7.690E-02
XD 5.300E+01

```

```

ZKDS      7.200E-01
ZKDU      7.200E-01
ZKDA      7.200E-01
DF         8.000E-01
QI        2.846E+08
SL        1.980E+02
THALF     1.000E+00
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y)          9.4231E-01
UNSATURATED PORE VELOCITY (m/y)    3.3333E-01
DECAY CONSTANT(S) (1/y)           6.9315E-01
RETARDATION FACTOR(S) (SATURATED)  1.4680E+01
RETARDATION FACTOR (UNSATURATED)   5.5600E+00
SOLUBILITY LIMITED MASS (mg)       2.3166E+08
SOLUBILITY LIMITED ACTIVITY (Ci)   0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)  6.6720E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 1.0000E+00
-----
>>> RESULTS OF CALCULATIONS
*****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 4.25-202 mg/L
AVERAGE CONCENTRATION 3.24-203 mg/L
PEAK TIME (y): 6.682536E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 8.281+207
LIMITING SOIL CONCENTRATION (mg/kg): 5.520+204
LIMITING INVENTORY IN SOIL (mg): 7.021+210
WARNING !!! THE LIMITING SOIL MASS OF 7.021+210 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 2.317E+08 mg
EXECUTION TIME (seconds) 1
*****
* RUN NUMBER 8 *
*****
TITLE: PBF-752:XYLENE
AL      1.730E+02
WA      1.730E+02
XD      8.700E+01
THICKS  8.690E-02
QI      8.674E+08
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y)          8.3388E-01
UNSATURATED PORE VELOCITY (m/y)    3.3333E-01
DECAY CONSTANT(S) (1/y)           6.9315E-01
RETARDATION FACTOR(S) (SATURATED)  1.4680E+01
RETARDATION FACTOR (UNSATURATED)   5.5600E+00
SOLUBILITY LIMITED MASS (mg)       7.1065E+08
SOLUBILITY LIMITED ACTIVITY (Ci)   0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)  6.6720E+02
FRACTION DECAYED DURING UNSAT TRANSPORT 1.0000E+00
-----
>>> RESULTS OF CALCULATIONS
*****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 4.44-202 mg/L
AVERAGE CONCENTRATION 4.04-203 mg/L
PEAK TIME (y): 6.683085E+02
LIMITING SOIL CONCENTRATION (mg/m**3): 6.600+207
LIMITING SOIL CONCENTRATION (mg/kg): 4.400+204
LIMITING INVENTORY IN SOIL (mg): 1.717+211
WARNING !!! THE LIMITING SOIL MASS OF 1.717+211 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 7.107E+08 mg
EXECUTION TIME (seconds) 1
*****
* RUN NUMBER 9 *
*****
TITLE: PBF-742:NAPHTHALENE
KFLAG    0.000E+00
AL       1.050E+02
WA       1.050E+02
THICKS   7.690E-02
XD       5.300E+01
ZKDS     3.900E+00
ZKDU     3.900E+00
ZKDA     3.900E+00
DF       1.000E+00
QI       3.415E+08
SL       3.170E+01
THALF    0.000E+00
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y)          2.1145E-01
UNSATURATED PORE VELOCITY (m/y)    3.3333E-01
DECAY CONSTANT(S) (1/y)           0.0000E+00
RETARDATION FACTOR(S) (SATURATED)  7.5100E+01
RETARDATION FACTOR (UNSATURATED)   2.5700E+01
SOLUBILITY LIMITED MASS (mg)       1.6529E+08
SOLUBILITY LIMITED ACTIVITY (Ci)   0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)  3.0840E+03

```

FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00

>>> RESULTS OF CALCULATIONS

>>> CONCENTRATION VS TIME MODE

TIME (years)	CUMULATIVE SOURCE FLUX (mg)	CUMULATIVE AQUIFER FLUX (mg)	AQUIFER FLUX (mg/year)	GW CONC ... member #1 (mg/m**3)
2.9500E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
2.9600E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
2.9700E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
2.9800E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
2.9900E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0000E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0100E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0200E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0300E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0400E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0500E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0600E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0700E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0800E+03	3.4150E+08	0.0000E+00	0.0000E+00	0.0000E+00
3.0900E+03	3.4150E+08	2.0652E+08	2.8540E+07	1.3805E+02
3.1000E+03	3.4150E+08	3.2521E+08	3.4448E+06	1.6767E+02
3.1100E+03	3.4150E+08	3.3953E+08	4.1579E+05	5.5664E+01
3.1200E+03	3.4150E+08	3.4126E+08	5.0185E+04	1.1686E+01
3.1300E+03	3.4150E+08	3.4147E+08	6.0573E+03	2.0110E+00
3.1400E+03	3.4150E+08	3.4150E+08	7.3111E+02	3.1237E-01
3.1500E+03	3.4150E+08	3.4150E+08	8.8244E+01	4.5549E-02

AVERAGE INTEGRATED CONCENTRATION FROM 2.9500E+03 TO 3.1500E+03 YEARS = 1.83E+01 mg/m\*\*3

MAXIMUM CONCENTRATION(S) mg/m\*\*3

1.68E+02

TIME(S) OF MAXIMUM CONCENTRATIONS (years)

3.10E+03

EXECUTION TIME (seconds) 0

\*\*\*\*\*

\* RUN NUMBER 10 \*

\*\*\*\*\*

TITLE: PBF-752:NAPHTHALENE

AL 1.730E+02

WA 1.730E+02

XD 8.700E+01

THICKS 8.690E-02

QI 1.041E+09

>>> VALUES CALCULATED IN SOURCE SUBROUTINE

LEACH RATE CONSTANT (1/y)	1.8711E-01
UNSATURATED PORE VELOCITY (m/y)	3.3333E-01
DECAY CONSTANT(S) (1/y)	0.0000E+00
RETARDATION FACTOR(S) (SATURATED)	7.5100E+01
RETARDATION FACTOR (UNSATURATED)	2.5700E+01
SOLUBILITY LIMITED MASS (mg)	5.0704E+08
SOLUBILITY LIMITED ACTIVITY (Ci)	0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years)	3.0840E+03
FRACTION DECAYED DURING UNSAT TRANSPORT	0.0000E+00

>>> RESULTS OF CALCULATIONS

\*\*\*\*\*

>>> CONCENTRATION VS TIME MODE

TIME (years)	CUMULATIVE SOURCE FLUX (mg)	CUMULATIVE AQUIFER FLUX (mg)	AQUIFER FLUX (mg/year)	GW CONC ... member #1 (mg/m**3)
2.9500E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
2.9600E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
2.9700E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
2.9800E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
2.9900E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0000E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0100E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0200E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0300E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0400E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0500E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0600E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0700E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0800E+03	1.0410E+09	0.0000E+00	0.0000E+00	0.0000E+00
3.0900E+03	1.0410E+09	5.6805E+08	8.8495E+07	1.3990E+02
3.1000E+03	1.0410E+09	9.6819E+08	1.3624E+07	2.6792E+02
3.1100E+03	1.0410E+09	1.0298E+09	2.0974E+06	1.9534E+02
3.1200E+03	1.0410E+09	1.0393E+09	3.2289E+05	7.6968E+01
3.1300E+03	1.0410E+09	1.0407E+09	4.9708E+04	2.1119E+01
3.1400E+03	1.0410E+09	1.0410E+09	7.6525E+03	4.7172E+00
3.1500E+03	1.0410E+09	1.0410E+09	1.1781E+03	9.3430E-01

AVERAGE INTEGRATED CONCENTRATION FROM 2.9500E+03 TO 3.1500E+03 YEARS = 3.48E+01 mg/m\*\*3

MAXIMUM CONCENTRATION(S) mg/m\*\*3

2.68E+02

```

TIME(S) OF MAXIMUM CONCENTRATIONS (years)
3.10E+03
EXECUTION TIME (seconds) 0
*****
* RUN NUMBER 11 *
*****
TITLE: PBF-742:METHYLNAPHTHALENE
KFLAG 1.000E+00
AL 1.050E+02
WA 1.050E+02
THICKS 7.690E-02
XD 5.300E+01
ZKDS 2.550E+01
ZKDU 2.550E+01
ZKDA 2.550E+01
DF 1.000E+00
QI 8.537E+08
SL 2.540E+01
THALF 0.000E+00
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y) 3.3733E-02
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 4.8550E+02
RETARDATION FACTOR (UNSATURATED) 1.6250E+02
SOLUBILITY LIMITED MASS (mg) 8.3016E+08
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 1.9500E+04
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00
-----
>>> RESULTS OF CALCULATIONS
*****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 7.97E-02 mg/L
AVERAGE CONCENTRATION 7.83E-02 mg/L
PEAK TIME (y): 1.956374E+04
LIMITING SOIL CONCENTRATION (mg/m**3): 1.286E+07
LIMITING SOIL CONCENTRATION (mg/kg): 8.572E+03
LIMITING INVENTORY IN SOIL (mg): 1.090E+10
WARNING !!! THE LIMITING SOIL MASS OF 1.090E+10 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 8.302E+08 mg
EXECUTION TIME (seconds) 1
*****
* RUN NUMBER 12 *
*****
TITLE: PBF-752:METHYLNAPHTHALENE
AL 1.730E+02
WA 1.730E+02
XD 8.700E+01
THICKS 8.690E-02
QI 2.602E+09
SL 2.540E+01
THALF 0.000E+00
>>> VALUES CALCULATED IN SOURCE SUBROUTINE
*****
LEACH RATE CONSTANT (1/y) 2.9851E-02
UNSATURATED PORE VELOCITY (m/y) 3.3333E-01
DECAY CONSTANT(S) (1/y) 0.0000E+00
RETARDATION FACTOR(S) (SATURATED) 4.8550E+02
RETARDATION FACTOR (UNSATURATED) 1.6250E+02
SOLUBILITY LIMITED MASS (mg) 2.5467E+09
SOLUBILITY LIMITED ACTIVITY (Ci) 0.0000E+00
TRANSIT TIME IN UNSAT ZONE (years) 1.9500E+04
FRACTION DECAYED DURING UNSAT TRANSPORT 0.0000E+00
-----
>>> RESULTS OF CALCULATIONS
*****
MAXIMUM NON RADIOLOGICAL CONTAMINANT CALCULATION
MAXIMUM CONCENTRATION 1.06E-01 mg/L
AVERAGE CONCENTRATION 1.05E-01 mg/L
PEAK TIME (y): 1.959878E+04
LIMITING SOIL CONCENTRATION (mg/m**3): 9.522E+06
LIMITING SOIL CONCENTRATION (mg/kg): 6.348E+03
LIMITING INVENTORY IN SOIL (mg): 2.476E+10
WARNING !!! THE LIMITING SOIL MASS OF 2.476E+10 mg
EXCEEDS THE SOLUBILITY LIMITED SOURCE MASS OF 2.547E+09 mg
EXECUTION TIME (seconds) 1
*****
* RUN NUMBER 13 *
*****

```

## Attachment B HSSM Output

1

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*****
HSSM          HYDROCARBON SPILL SIMULATION MODEL
*****
KOPT          KINEMATIC OILY POLLUTANT TRANSPORT
OILENS        RADIAL OIL LENS MOTION
TSGPLUME      TRANSIENT SOURCE GAUSSIAN PLUME
*****
Migration of bulk hydrocarbons from
PBF-752 Tank
```

### INPUT DATA

```
DATA FILES:
KOPT/OILENS INPUT:  C:\HSSM\PROJECTS\PBF-TANK\HYDRO_C.DAT
KOPT/OILENS OUTPUT: C:\HSSM\PROJECTS\PBF-TANK\HYDRO_C.HSS
KOPT/OILENS PLOT 1: C:\HSSM\PROJECTS\PBF-TANK\HYDRO_C.PL1
KOPT/OILENS PLOT 2: C:\HSSM\PROJECTS\PBF-TANK\HYDRO_C.PL2
KOPT/OILENS PLOT 3: C:\HSSM\PROJECTS\PBF-TANK\HYDRO_C.PL3
TSGPLUME INPUT:     C:\HSSM\PROJECTS\PBF-TANK\HYDRO_C.PMI
TSGPLUME OUTPUT:    C:\HSSM\PROJECTS\PBF-TANK\HYDRO_C.TSG
TSGPLUME PLOT:      C:\HSSM\PROJECTS\PBF-TANK\HYDRO_C.PMP

INTERFACE FLAG      = W
WRITING CRITERIA    = 1
KOPT RUN FLAG       = 1
DISSOLVED CONSTITUENT FLAG = 1
OILENS RUN FLAG     = 1
TSGPLUME RUN FLAG   = 1

CONSTANTS & MATRIX PROPERTIES.....
SAT. VERT. HYD.CONDUCTIVITY = .6550E-01
RATIO OF HORIZONTAL TO
VERTICAL CONDUCTIVITY      = 1.000
RELATIVE PERMEABILITY INDEX = 2
POROSITY                    = .4870
RESIDUAL WATER SATURATION   = .1420
VAN GENUCHTEN'S N          = 1.066

WATER EVENT CHARACTERISTICS.....
DYNAMIC VISCOSITY          = 1.000
DENSITY                    = 1.000
RAIN TYPE : 1-FLUX 2-SAT.  = 1
WATER FLUX OR SATURATION   = .2740E-03
MAX KRW DURING INFILTRATION = .5000
DEPTH TO WATER TABLE      = 40.80

POLLUTANT EVENT CHARACTERISTICS.....
DYNAMIC VISCOSITY          = 5.900
DENSITY                    = .8500
RESIDUAL OIL SATURATION    = .1100
OIL LOADING TYPE           = 1

CAPILLARY SUCTION PARAMETERS.....
VAN GENUCHTENS ALPHA       = 1.523
WATER SURFACE TENSION      = 65.00
OIL SURFACE TENSION        = 30.00

FLUX LOADING RATE          = .6670E-02
BEGINNING TIME             = .0000
ENDING TIME                 = 183.0

DISSOLVED CONSTITUENT PARAMETERS.....
INITIAL CONC. IN OIL       = 170.0
OIL/WATER PARTITION COEF.  = 300.0
SOIL/WATER PARTITION COEF. = .2500
SOIL/WATER (HYDROCARBON)   = 1.000
BULK DENSITY               = 1.500

OILENS SUBMODEL PARAMETERS.....
RADIUS OF POLLUTANT SOURCE = 1.153
RADIUS MULTIPLYING FACTOR  = 1.001
THICKNESS OF CAP. FRINGE   = .1000E-01
AQUIFER'S VERT DISPERSIVITY = .1000
GROUNDWATER GRADIENT       = .2000E-01
OIL RESIDUAL IN AQUIFER    = .2000
MAX OIL SATURATION IN LENS = .5000
WATER SOLUBILITY CONTAMINANT = 1750.
WATER SOLUBILITY OF OIL    = 200.0

SIMULATION PARAMETERS.....
```

SIMULATION ENDING TIME = 150.0  
 MAXIMUM RKF TIME STEP = 1.000  
 MIN. TIME BETWEEN PRINTING = .1000  
 ENDING CRITERIA =  
 FACTOR FOR ENDING CRITERIA 4= .2000E-01

PROFILES.....  
 NUMBER OF PROFILES = 10  
 AT TIMES:  
     1.0000      20.0000      30.0000  
     40.0000      50.0000      70.0000  
     100.0000     150.0000     200.0000  
     300.0000

TSGPLUME MODEL PARAMETERS.....  
 LONGITUDINAL DISPERSIVITY (M) 9.000  
 TRANSVERSE DISPERSIVITY (M) 4.000  
 PERCENT MAX. RADIUS 100.0  
 MINIMUM OUTPUT CONC. (MG/L) .1000E-01  
 CONSTITUENT HALF LIFE (D) .0000  
 NUMBER OF RECEPTOR WELLS 6  
 BEGINNING TIME (D) 100.0  
 ENDING TIME (D) .1000E+05  
 TIME INCREMENT (D) 100.0  
 AQUIFER THICKNESS (M) 15.00

RECEPTOR WELL LOCATIONS  
                   X                   Y  
     10.00      .0000  
     100.0      .0000  
     200.0      .0000  
     300.0      .0000  
     400.0      .0000  
     500.0      50.00

\*\*\*END OF INPUT DATA\*\*\*

CALCULATED PARAMETERS.....  
 SAT. OIL CONDUCTIVITY = .9436E-02  
 AREA OF THE SOURCE = 4.180  
 APPROX. BROOKS AND COREY  
 LAMBDA = .6600E-01  
 AIR ENTRY HEAD = .4039E-06  
 TRAPPED AIR SATURATION = .1767E-01  
 WATER SATURATION = .8699  
 WATER FLUX = .2740E-03  
 MAX. OIL CONDUCTIVITY = .3633E-07

1

# WATER-AIR CAPILLARY PRESSURE CURVE \*\*\*\*\*

WATER      CAPILLARY  
 SATURATION HEAD (CM WATER)  
 =====

.1620	*****
.1820	*****
.2020	*****
.2220	*****
.2420	*****
.2620	*****
.2820	*****
.3020	45444.3700
.3220	7628.3520
.3420	1545.7010
.3620	364.7161
.3820	97.5872
.4020	29.0193
.4220	9.4413
.4420	3.3192
.4620	1.2484
.4820	.4982
.5020	.2096
.5220	.0924
.5420	.0425
.5620	.0203
.5820	.0100
.6020	.0051
.6220	.0027
.6420	.0014
.6620	.0008
.6820	.0005
.7020	.0003
.7220	.0002
.7420	.0001
.7620	.0001
.7820	.0000
.8020	.0000

```

.8220 .0000
.8420 .0000
.8620 .0000
.8820 .0000
.9020 .0000
.9220 .0000
.9420 .0000
.9620 .0000
1.0000 .0000

```

1

OIL-AIR CAPILLARY PRESSURE CURVE  
\*\*\*\*\*

OIL CAPILLARY  
SATURATION HEAD (CM OIL)  
=====

```

.1300 *****
.1500 *****
.1700 *****
.1900 *****
.2100 *****
.2300 *****
.2500 *****
.2700 42975.8000
.2900 7213.9740
.3100 1461.7370
.3300 344.9041
.3500 92.2861
.3700 27.4429
.3900 8.9285
.4100 3.1389
.4300 1.1806
.4500 .4712
.4700 .1982
.4900 .0874
.5100 .0402
.5300 .0192
.5500 .0095
.5700 .0048
.5900 .0025
.6100 .0014
.6300 .0008
.6500 .0004
.6700 .0002
.6900 .0001
.7100 .0001
.7300 .0001
.7500 .0000
.7700 .0000
.7900 .0000
.8100 .0000
.8300 .0000
.8500 .0000
.8700 .0000
.8900 .0000
.9100 .0000
.9300 .0000
.9500 .0000
.9700 .0000
1.0000 .0000

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1

\*\*\*\*\*  
LOCATION OF THE OIL FRONT  
\*\*\*\*\*  
Migration of bulk hydrocarbons from  
PBF-752 Tank

STEP	TIME (D)	OIL					PONDING (M)	UCHAR SPD. (M/D)	FRONT SPD. (M/D)	DCHAR SPD. (M/D)
		DEPTH (M)	SATURATION (*)	FLUX (M/D)	RUNOFF (KG/M/M)	MASS (KG)				
1	.0000	.0010	.1124	.0000	.0000	.0000	.0000	.0001	.0000	.0000
3	1.0000	.0010	.1124	.0000	5.669	.1965	.0000	.0001	.0000	.0000
4	2.0000	.0010	.1124	.0000	11.34	.1969	.0000	.0001	.0000	.0000
5	3.0000	.0010	.1124	.0000	17.01	.1972	.0000	.0001	.0000	.0000
6	3.6600	.0010	.1124	.0000	20.75	.1975	.0000	.0001	.0000	.0000
7	4.6600	.0010	.1124	.0000	26.42	.1978	.0000	.0001	.0000	.0000
8	5.6600	.0010	.1124	.0000	32.09	.1982	.0000	.0001	.0000	.0000
9	6.6600	.0010	.1124	.0000	37.76	.1985	.0000	.0001	.0000	.0000
10	7.3200	.0010	.1124	.0000	41.50	.1988	.0000	.0001	.0000	.0000
11	8.3200	.0010	.1124	.0000	47.17	.1992	.0000	.0001	.0000	.0000



12	9.3200	.0010	.1124	.0000	52.84	.1995	.0000	.0001	.0000	.0000
13	10.3200	.0010	.1124	.0000	58.51	.1999	.0000	.0001	.0000	.0000
14	10.9800	.0010	.1124	.0000	62.25	.2001	.0000	.0001	.0000	.0000
15	11.9800	.0010	.1124	.0000	67.92	.2005	.0000	.0001	.0000	.0000
16	12.9800	.0010	.1124	.0000	73.59	.2009	.0000	.0001	.0000	.0000
17	13.9800	.0010	.1124	.0000	79.26	.2012	.0000	.0001	.0000	.0000
18	14.6400	.0010	.1124	.0000	83.00	.2014	.0000	.0001	.0000	.0000
19	15.6400	.0010	.1124	.0000	88.67	.2018	.0000	.0001	.0000	.0000
20	16.6400	.0010	.1124	.0000	94.34	.2022	.0000	.0001	.0000	.0000
21	17.6400	.0010	.1124	.0000	100.0	.2025	.0000	.0001	.0000	.0000
22	18.3000	.0010	.1124	.0000	103.8	.2028	.0000	.0001	.0000	.0000
23	19.3000	.0010	.1124	.0000	109.4	.2031	.0000	.0001	.0000	.0000
24	20.0000	.0010	.1124	.0000	113.4	.2034	.0000	.0001	.0000	.0000
25	21.0000	.0010	.1124	.0000	119.1	.2037	.0000	.0001	.0000	.0000
26	22.0000	.0010	.1124	.0000	124.7	.2041	.0000	.0001	.0000	.0000
27	23.0000	.0010	.1124	.0000	130.4	.2044	.0000	.0001	.0000	.0000
28	24.0000	.0010	.1124	.0000	136.1	.2048	.0000	.0001	.0000	.0000
29	25.0000	.0010	.1124	.0000	141.7	.2052	.0000	.0001	.0000	.0000
30	26.0000	.0010	.1124	.0000	147.4	.2055	.0000	.0001	.0000	.0000
31	27.0000	.0010	.1124	.0000	153.1	.2059	.0000	.0001	.0000	.0000
32	28.0000	.0010	.1124	.0000	158.7	.2062	.0000	.0001	.0000	.0000
33	29.0000	.0010	.1124	.0000	164.4	.2066	.0000	.0001	.0000	.0000
34	30.0000	.0010	.1124	.0000	170.1	.2069	.0000	.0001	.0000	.0000
35	31.0000	.0010	.1124	.0000	175.8	.2073	.0000	.0001	.0000	.0000
36	32.0000	.0010	.1124	.0000	181.4	.2077	.0000	.0001	.0000	.0000
37	33.0000	.0010	.1124	.0000	187.1	.2080	.0000	.0001	.0000	.0000
38	34.0000	.0010	.1124	.0000	192.8	.2084	.0000	.0001	.0000	.0000
39	35.0000	.0010	.1124	.0000	198.4	.2087	.0000	.0001	.0000	.0000
40	36.0000	.0010	.1124	.0000	204.1	.2091	.0000	.0001	.0000	.0000
41	36.6000	.0010	.1124	.0000	207.5	.2093	.0000	.0001	.0000	.0000
42	37.6000	.0010	.1124	.0000	213.2	.2097	.0000	.0001	.0000	.0000
43	38.6000	.0010	.1124	.0000	218.8	.2100	.0000	.0001	.0000	.0000
44	39.6000	.0010	.1124	.0000	224.5	.2104	.0000	.0001	.0000	.0000
45	40.0000	.0010	.1124	.0000	226.8	.2105	.0000	.0001	.0000	.0000
46	41.0000	.0010	.1124	.0000	232.4	.2109	.0000	.0001	.0000	.0000
47	42.0000	.0010	.1124	.0000	238.1	.2112	.0000	.0001	.0000	.0000
48	43.0000	.0010	.1124	.0000	243.8	.2116	.0000	.0001	.0000	.0000
49	44.0000	.0010	.1124	.0000	249.5	.2120	.0000	.0001	.0000	.0000
50	45.0000	.0010	.1124	.0000	255.1	.2123	.0000	.0001	.0000	.0000
51	46.0000	.0010	.1124	.0000	260.8	.2127	.0000	.0001	.0000	.0000
52	47.0000	.0010	.1124	.0000	266.5	.2130	.0000	.0001	.0000	.0000
53	48.0000	.0010	.1124	.0000	272.1	.2134	.0000	.0001	.0000	.0000
54	49.0000	.0010	.1124	.0000	277.8	.2138	.0000	.0001	.0000	.0000
55	50.0000	.0010	.1124	.0000	283.5	.2141	.0000	.0001	.0000	.0000
56	51.0000	.0010	.1124	.0000	289.1	.2145	.0000	.0001	.0000	.0000
57	52.0000	.0010	.1124	.0000	294.8	.2148	.0000	.0001	.0000	.0000
58	53.0000	.0010	.1124	.0000	300.5	.2152	.0000	.0001	.0000	.0000
59	54.0000	.0010	.1124	.0000	306.2	.2155	.0000	.0001	.0000	.0000
60	54.9000	.0010	.1124	.0000	311.3	.2159	.0000	.0001	.0000	.0000
61	55.9000	.0010	.1124	.0000	316.9	.2162	.0000	.0001	.0000	.0000
62	56.9000	.0010	.1124	.0000	322.6	.2166	.0000	.0001	.0000	.0000
63	57.9000	.0010	.1124	.0000	328.3	.2169	.0000	.0001	.0000	.0000
64	58.9000	.0010	.1124	.0000	333.9	.2173	.0000	.0001	.0000	.0000
65	59.9000	.0010	.1124	.0000	339.6	.2177	.0000	.0001	.0000	.0000
66	60.9000	.0010	.1124	.0000	345.3	.2180	.0000	.0001	.0000	.0000
67	61.9000	.0010	.1124	.0000	350.9	.2184	.0000	.0001	.0000	.0000
68	62.9000	.0011	.1124	.0000	356.6	.2187	.0000	.0001	.0000	.0000
70	63.9057	.0011	.1124	.0000	362.3	.2191	.0000	.0001	.0000	.0000
71	64.9057	.0011	.1124	.0000	368.0	.2195	.0000	.0001	.0000	.0000
72	65.9057	.0011	.1124	.0000	373.7	.2198	.0000	.0001	.0000	.0000
73	66.8553	.0011	.1124	.0000	379.0	.2201	.0000	.0001	.0000	.0000
74	67.8553	.0011	.1124	.0000	384.7	.2205	.0000	.0001	.0000	.0000
75	68.8553	.0011	.1124	.0000	390.4	.2209	.0000	.0001	.0000	.0000
76	69.8553	.0011	.1124	.0000	396.0	.2212	.0000	.0001	.0000	.0000
77	70.0000	.0011	.1124	.0000	396.9	.2213	.0000	.0001	.0000	.0000
78	70.6671	.0011	.1124	.0000	400.6	.2215	.0000	.0001	.0000	.0000
79	71.6671	.0011	.1124	.0000	406.3	.2219	.0000	.0001	.0000	.0000
80	72.6671	.0011	.1124	.0000	412.0	.2222	.0000	.0001	.0000	.0000
81	73.2000	.0011	.1124	.0000	415.0	.2224	.0000	.0001	.0000	.0000
82	74.2000	.0011	.1124	.0000	420.7	.2228	.0000	.0001	.0000	.0000
84	75.2110	.0011	.1124	.0000	426.4	.2231	.0000	.0001	.0000	.0000
85	76.2110	.0011	.1124	.0000	432.1	.2235	.0000	.0001	.0000	.0000
86	77.2110	.0011	.1124	.0000	437.7	.2239	.0000	.0001	.0000	.0000
87	78.2110	.0011	.1124	.0000	443.4	.2242	.0000	.0001	.0000	.0000
89	79.2142	.0011	.1124	.0000	449.1	.2246	.0000	.0001	.0000	.0000
90	80.2142	.0011	.1124	.0000	454.8	.2249	.0000	.0001	.0000	.0000
91	81.2142	.0011	.1124	.0000	460.4	.2253	.0000	.0001	.0000	.0000
92	82.1026	.0011	.1124	.0000	465.5	.2256	.0000	.0001	.0000	.0000
93	83.1026	.0011	.1124	.0000	471.1	.2260	.0000	.0001	.0000	.0000
94	84.1026	.0011	.1124	.0000	476.8	.2263	.0000	.0001	.0000	.0000
95	85.1026	.0011	.1124	.0000	482.5	.2267	.0000	.0001	.0000	.0000
96	86.1026	.0011	.1124	.0000	488.2	.2270	.0000	.0001	.0000	.0000
97	87.1026	.0011	.1124	.0000	493.8	.2274	.0000	.0001	.0000	.0000
98	88.1026	.0011	.1124	.0000	499.5	.2278	.0000	.0001	.0000	.0000
99	89.1026	.0011	.1124	.0000	505.2	.2281	.0000	.0001	.0000	.0000
100	90.1026	.0011	.1124	.0000	510.8	.2285	.0000	.0001	.0000	.0000
101	91.1026	.0011	.1124	.0000	516.5	.2288	.0000	.0001	.0000	.0000
102	91.5000	.0011	.1124	.0000	518.8	.2290	.0000	.0001	.0000	.0000
103	92.5000	.0011	.1124	.0000	524.4	.2293	.0000	.0001	.0000	.0000
104	93.5000	.0011	.1124	.0000	530.1	.2297	.0000	.0001	.0000	.0000
105	94.5000	.0011	.1124	.0000	535.8	.2301	.0000	.0001	.0000	.0000
106	95.5000	.0011	.1124	.0000	541.4	.2304	.0000	.0001	.0000	.0000
107	96.5000	.0011	.1124	.0000	547.1	.2308	.0000	.0001	.0000	.0000
108	97.5000	.0011	.1124	.0000	552.8	.2311	.0000	.0001	.0000	.0000
109	98.5000	.0011	.1124	.0000	558.4	.2315	.0000	.0001	.0000	.0000
110	99.5000	.0011	.1124	.0000	564.1	.2318	.0000	.0001	.0000	.0000
111	100.0000	.0011	.1124	.0000	566.9	.2320	.0000	.0001	.0000	.0000
112	101.0000	.0011	.1124	.0000	572.6	.2324	.0000	.0001	.0000	.0000
114	102.0064	.0011	.1124	.0000	578.3	.2327	.0000	.0001	.0000	.0000
115	103.0064	.0011	.1124	.0000	584.0	.2331	.0000	.0001	.0000	.0000
116	104.0064	.0011	.1124	.0000	589.7	.2335	.0000	.0001	.0000	.0000

117	105.0064	.0011	.1124	.0000	595.3	.2338	.0000	.0001	.0000	.0000
118	106.0064	.0011	.1124	.0000	601.0	.2342	.0000	.0001	.0000	.0000
119	107.0064	.0011	.1124	.0000	606.7	.2345	.0000	.0001	.0000	.0000
120	108.0064	.0011	.1124	.0000	612.3	.2349	.0000	.0001	.0000	.0000
121	109.0064	.0011	.1124	.0000	618.0	.2352	.0000	.0001	.0000	.0000
122	109.8000	.0011	.1124	.0000	622.5	.2355	.0000	.0001	.0000	.0000
123	110.8000	.0011	.1124	.0000	628.2	.2359	.0000	.0001	.0000	.0000
124	111.8000	.0011	.1124	.0000	633.8	.2362	.0000	.0001	.0000	.0000
125	112.8000	.0011	.1124	.0000	639.5	.2366	.0000	.0001	.0000	.0000
126	113.8000	.0011	.1124	.0000	645.2	.2370	.0000	.0001	.0000	.0000
127	114.8000	.0011	.1124	.0000	650.9	.2373	.0000	.0001	.0000	.0000
128	115.8000	.0011	.1124	.0000	656.5	.2377	.0000	.0001	.0000	.0000
129	116.8000	.0011	.1124	.0000	662.2	.2380	.0000	.0001	.0000	.0000
130	117.8000	.0011	.1124	.0000	667.9	.2384	.0000	.0001	.0000	.0000
131	118.8000	.0011	.1124	.0000	673.5	.2388	.0000	.0001	.0000	.0000
132	119.8000	.0011	.1124	.0000	679.2	.2391	.0000	.0001	.0000	.0000
134	120.8167	.0011	.1124	.0000	685.0	.2395	.0000	.0001	.0000	.0000
135	121.8167	.0011	.1124	.0000	690.6	.2398	.0000	.0001	.0000	.0000
136	122.8167	.0011	.1124	.0000	696.3	.2402	.0000	.0001	.0000	.0000
137	123.8167	.0011	.1124	.0000	702.0	.2406	.0000	.0001	.0000	.0000
138	124.8167	.0011	.1124	.0000	707.6	.2409	.0000	.0001	.0000	.0000
139	125.8167	.0011	.1124	.0000	713.3	.2413	.0000	.0001	.0000	.0000
140	126.8167	.0011	.1124	.0000	719.0	.2416	.0000	.0001	.0000	.0000
141	127.8167	.0011	.1124	.0000	724.7	.2420	.0000	.0001	.0000	.0000
142	128.1000	.0011	.1124	.0000	726.3	.2421	.0000	.0001	.0000	.0000
143	129.1000	.0011	.1124	.0000	731.9	.2424	.0000	.0001	.0000	.0000
144	130.1000	.0011	.1124	.0000	737.6	.2428	.0000	.0001	.0000	.0000
145	131.1000	.0011	.1124	.0000	743.3	.2432	.0000	.0001	.0000	.0000
146	132.1000	.0011	.1124	.0000	748.9	.2435	.0000	.0001	.0000	.0000
147	133.1000	.0011	.1124	.0000	754.6	.2439	.0000	.0001	.0000	.0000
148	134.1000	.0011	.1124	.0000	760.3	.2442	.0000	.0001	.0000	.0000
149	135.1000	.0011	.1124	.0000	765.9	.2446	.0000	.0001	.0000	.0000
150	136.1000	.0011	.1124	.0000	771.6	.2450	.0000	.0001	.0000	.0000
151	137.1000	.0011	.1124	.0000	777.3	.2453	.0000	.0001	.0000	.0000
152	138.1000	.0011	.1124	.0000	783.0	.2457	.0000	.0001	.0000	.0000
153	139.1000	.0011	.1124	.0000	788.6	.2460	.0000	.0001	.0000	.0000
155	140.1071	.0011	.1124	.0000	794.3	.2464	.0000	.0001	.0000	.0000
156	141.1071	.0011	.1124	.0000	800.0	.2467	.0000	.0001	.0000	.0000
157	142.1071	.0011	.1124	.0000	805.7	.2471	.0000	.0001	.0000	.0000
158	143.1071	.0011	.1124	.0000	811.3	.2475	.0000	.0001	.0000	.0000
159	144.1071	.0011	.1124	.0000	817.0	.2478	.0000	.0001	.0000	.0000
160	145.1071	.0011	.1124	.0000	822.7	.2482	.0000	.0001	.0000	.0000
161	146.1071	.0011	.1124	.0000	828.3	.2485	.0000	.0001	.0000	.0000
162	146.4000	.0011	.1124	.0000	830.0	.2486	.0000	.0001	.0000	.0000
163	147.4000	.0011	.1124	.0000	835.7	.2490	.0000	.0001	.0000	.0000
164	148.4000	.0011	.1124	.0000	841.3	.2494	.0000	.0001	.0000	.0000
165	149.4000	.0011	.1124	.0000	847.0	.2497	.0000	.0001	.0000	.0000
166	150.0000	.0011	.1124	.0000	850.4	.2499	.0000	.0001	.0000	.0000

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 LOCATION OF THE CONSTITUENT FRONT  
 \*\*\*\*\*  
 Migration of bulk hydrocarbons from  
 PBF-752 Tank

STEP	TIME	CONSTITUENT		CONC-WATER	MASS/AREA	CUMULATIVE
		DEPTHS	DEPTHS			
		LOWER	UPPER			VOLATILIZATION
3	1.0000	.0000	.0000	.5667	.8381E-07	.0000
4	2.0000	.0000	.0000	.5667	.1676E-06	.0000
5	3.0000	.0000	.0000	.5667	.2514E-06	.0000
6	3.6600	.0001	.0000	.5667	.3067E-06	.0000
7	4.6600	.0001	.0000	.5667	.3140E-06	.0000
8	5.6600	.0001	.0000	.5667	.3203E-06	.0000
9	6.6600	.0001	.0000	.5667	.3258E-06	.0000
10	7.3200	.0001	.0000	.5667	.3210E-06	.0000
11	8.3200	.0001	.0000	.5667	.3379E-06	.0000
12	9.3200	.0002	.0000	.5667	.3482E-06	.0000
13	10.3200	.0002	.0000	.5667	.3521E-06	.0000
14	10.9800	.0002	.0000	.5667	.3512E-06	.0000
15	11.9800	.0002	.0000	.5667	.3443E-06	.0000
16	12.9800	.0002	.0000	.5667	.3516E-06	.0000
17	13.9800	.0002	.0000	.5667	.3669E-06	.0000
18	14.6400	.0002	.0000	.5667	.3762E-06	.0000
19	15.6400	.0003	.0000	.5667	.3888E-06	.0000
20	16.6400	.0003	.0000	.5667	.3997E-06	.0000
21	17.6400	.0003	.0000	.5667	.4090E-06	.0000
22	18.3000	.0003	.0000	.5667	.4142E-06	.0000
23	19.3000	.0003	.0000	.5667	.4207E-06	.0000
24	20.0000	.0003	.0000	.5667	.4242E-06	.0000
25	21.0000	.0003	.0000	.5667	.4279E-06	.0000
26	22.0000	.0004	.0000	.5667	.4298E-06	.0000
27	23.0000	.0004	.0000	.5667	.4301E-06	.0000
28	24.0000	.0004	.0000	.5667	.4288E-06	.0000
29	25.0000	.0004	.0000	.5667	.4257E-06	.0000
30	26.0000	.0004	.0000	.5667	.4210E-06	.0000
31	27.0000	.0004	.0000	.5667	.4146E-06	.0000
32	28.0000	.0005	.0000	.5667	.4065E-06	.0000
33	29.0000	.0005	.0000	.5667	.4119E-06	.0000
34	30.0000	.0005	.0000	.5667	.4240E-06	.0000
35	31.0000	.0005	.0000	.5667	.4360E-06	.0000
36	32.0000	.0005	.0000	.5667	.4478E-06	.0000
37	33.0000	.0005	.0000	.5667	.4595E-06	.0000
38	34.0000	.0006	.0000	.5667	.4710E-06	.0000

39	35.0000	.0006	.0000	.5667	.4824E-06	.0000
40	36.0000	.0006	.0000	.5667	.4937E-06	.0000
41	36.6000	.0006	.0000	.5667	.5004E-06	.0000
42	37.6000	.0006	.0000	.5667	.5114E-06	.0000
43	38.6000	.0006	.0000	.5667	.5223E-06	.0000
44	39.6000	.0007	.0000	.5667	.5331E-06	.0000
45	40.0000	.0007	.0000	.5667	.5374E-06	.0000
46	41.0000	.0007	.0000	.5667	.5479E-06	.0000
47	42.0000	.0007	.0000	.5667	.5584E-06	.0000
48	43.0000	.0007	.0000	.5667	.5687E-06	.0000
49	44.0000	.0007	.0000	.5667	.5788E-06	.0000
50	45.0000	.0007	.0000	.5667	.5888E-06	.0000
51	46.0000	.0008	.0000	.5667	.5987E-06	.0000
52	47.0000	.0008	.0000	.5667	.6084E-06	.0000
53	48.0000	.0008	.0000	.5667	.6180E-06	.0000
54	49.0000	.0008	.0000	.5667	.6275E-06	.0000
55	50.0000	.0008	.0000	.5667	.6368E-06	.0000
56	51.0000	.0008	.0000	.5667	.6459E-06	.0000
57	52.0000	.0009	.0000	.5667	.6550E-06	.0000
58	53.0000	.0009	.0000	.5667	.6639E-06	.0000
59	54.0000	.0009	.0000	.5667	.6726E-06	.0000
60	54.9000	.0009	.0000	.5667	.6804E-06	.0000
61	55.9000	.0009	.0000	.5667	.6889E-06	.0000
62	56.9000	.0009	.0000	.5667	.6972E-06	.0000
63	57.9000	.0010	.0000	.5667	.7054E-06	.0000
64	58.9000	.0010	.0000	.5667	.7135E-06	.0000
65	59.9000	.0010	.0000	.5667	.7214E-06	.0000
66	60.9000	.0010	.0000	.5667	.7292E-06	.0000
67	61.9000	.0010	.0000	.5667	.7368E-06	.0000
68	62.9000	.0010	.0000	.5667	.7443E-06	.0000
70	63.9057	.0015	.0000	.5667	.7506E-06	.0000
71	64.9057	.0019	.0000	.5667	.7590E-06	.0000
72	65.9057	.0023	.0000	.5667	.7636E-06	.0000
73	66.8553	.0027	.0000	.5667	.7075E-06	.0000
74	67.8553	.0031	.0000	.5667	.7148E-06	.0000
75	68.8553	.0035	.0000	.5667	.7199E-06	.0000
76	69.8553	.0039	.0000	.5667	.7280E-06	.0000
77	70.0000	.0039	.0000	.5667	.7281E-06	.0000
78	70.6671	.0042	.0000	.5667	.7246E-06	.0000
79	71.6671	.0046	.0000	.5667	.7380E-06	.0000
80	72.6671	.0050	.0000	.5667	.7496E-06	.0000
81	73.2000	.0052	.0000	.5667	.7535E-06	.0000
82	74.2000	.0056	.0000	.5667	.7562E-06	.0000
84	75.2110	.0061	.0000	.5667	.7532E-06	.0000
85	76.2110	.0065	.0000	.5667	.7452E-06	.0000
86	77.2110	.0069	.0000	.5667	.7613E-06	.0000
87	78.2110	.0073	.0000	.5667	.7759E-06	.0000
89	79.2142	.0077	.0000	.5667	.7890E-06	.0000
90	80.2142	.0081	.0000	.5667	.8006E-06	.0000
91	81.2142	.0085	.0000	.5667	.8108E-06	.0000
92	82.1026	.0089	.0000	.5667	.8185E-06	.0000
93	83.1026	.0093	.0000	.5667	.8258E-06	.0000
94	84.1026	.0097	.0000	.5667	.8316E-06	.0000
95	85.1026	.0101	.0000	.5667	.8359E-06	.0000
96	86.1026	.0105	.0000	.5667	.8387E-06	.0000
97	87.1026	.0109	.0000	.5667	.8401E-06	.0000
98	88.1026	.0113	.0000	.5667	.8399E-06	.0000
99	89.1026	.0117	.0000	.5667	.8383E-06	.0000
100	90.1026	.0121	.0000	.5667	.8351E-06	.0000
101	91.1026	.0125	.0000	.5667	.8305E-06	.0000
102	91.5000	.0127	.0000	.5667	.8282E-06	.0000
103	92.5000	.0131	.0000	.5667	.8215E-06	.0000
104	93.5000	.0135	.0000	.5667	.8413E-06	.0000
105	94.5000	.0139	.0000	.5667	.8791E-06	.0000
106	95.5000	.0143	.0000	.5667	.8997E-06	.0000
107	96.5000	.0147	.0000	.5667	.9032E-06	.0000
108	97.5000	.0151	.0000	.5667	.8895E-06	.0000
109	98.5000	.0155	.0000	.5667	.9017E-06	.0000
110	99.5000	.0159	.0000	.5667	.9092E-06	.0000
111	100.0000	.0161	.0000	.5667	.9122E-06	.0000
112	101.0000	.0165	.0000	.5667	.9182E-06	.0000
114	102.0064	.0170	.0000	.5667	.9249E-06	.0000
115	103.0064	.0174	.0000	.5667	.9337E-06	.0000
116	104.0064	.0178	.0000	.5667	.9367E-06	.0000
117	105.0064	.0182	.0000	.5667	.9350E-06	.0000
118	106.0064	.0186	.0000	.5667	.9485E-06	.0000
119	107.0064	.0190	.0000	.5667	.9596E-06	.0000
120	108.0064	.0194	.0000	.5667	.9682E-06	.0000
121	109.0064	.0198	.0000	.5667	.9744E-06	.0000
122	109.8000	.0201	.0000	.5667	.9776E-06	.0000
123	110.8000	.0205	.0000	.5667	.9794E-06	.0000
124	111.8000	.0209	.0000	.5667	.9787E-06	.0000
125	112.8000	.0213	.0000	.5667	.9756E-06	.0000
126	113.8000	.0217	.0000	.5667	.9810E-06	.0000
127	114.8000	.0222	.0000	.5667	.9934E-06	.0000
128	115.8000	.0226	.0000	.5667	.1005E-05	.0000
129	116.8000	.0230	.0000	.5667	.1016E-05	.0000
130	117.8000	.0234	.0000	.5667	.1027E-05	.0000
131	118.8000	.0238	.0000	.5667	.1037E-05	.0000
132	119.8000	.0242	.0000	.5667	.1046E-05	.0000
134	120.8167	.0246	.0000	.5667	.1055E-05	.0000
135	121.8167	.0250	.0000	.5667	.1063E-05	.0000
136	122.8167	.0254	.0000	.5667	.1071E-05	.0000
137	123.8167	.0258	.0000	.5667	.1077E-05	.0000
138	124.8167	.0262	.0000	.5667	.1083E-05	.0000
139	125.8167	.0266	.0000	.5667	.1089E-05	.0000
140	126.8167	.0270	.0000	.5667	.1094E-05	.0000
141	127.8167	.0274	.0000	.5667	.1098E-05	.0000
142	128.1000	.0276	.0000	.5667	.1099E-05	.0000
143	129.1000	.0280	.0000	.5667	.1103E-05	.0000
144	130.1000	.0284	.0000	.5667	.1105E-05	.0000

145	131.1000	.0288	.0000	.5667	.1108E-05	.0000
146	132.1000	.0292	.0000	.5667	.1109E-05	.0000
147	133.1000	.0296	.0000	.5667	.1110E-05	.0000
148	134.1000	.0300	.0000	.5667	.1110E-05	.0000
149	135.1000	.0304	.0000	.5667	.1110E-05	.0000
150	136.1000	.0308	.0000	.5667	.1109E-05	.0000
151	137.1000	.0312	.0000	.5667	.1107E-05	.0000
152	138.1000	.0316	.0000	.5667	.1105E-05	.0000
153	139.1000	.0320	.0000	.5667	.1102E-05	.0000
155	140.1071	.0324	.0000	.5667	.1104E-05	.0000
156	141.1071	.0324	.0000	.5667	.1114E-05	.0000
157	142.1071	.0333	.0000	.5667	.1124E-05	.0000
158	143.1071	.0337	.0000	.5667	.1134E-05	.0000
159	144.1071	.0341	.0000	.5667	.1144E-05	.0000
160	145.1071	.0345	.0000	.5667	.1153E-05	.0000
161	146.1071	.0349	.0000	.5667	.1163E-05	.0000
162	146.4000	.0350	.0000	.5667	.1166E-05	.0000
163	147.4000	.0354	.0000	.5667	.1175E-05	.0000
164	148.4000	.0358	.0000	.5667	.1185E-05	.0000
165	149.4000	.0362	.0000	.5667	.1195E-05	.0000
166	150.0000	.0365	.0000	.5667	.1200E-05	.0000

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## **ATTACHMENT 2**



# Well Fitness Evaluation for the Idaho National Engineering Laboratory

## Volume 4

G. Sehlke  
D. E. Davis  
W. W. Tullock  
J. A. Williams

Published June 1993

*took depth to groundwater  
and total interbed thickness  
for PBF-31+32 from  
this report*

Idaho National Engineering Laboratory  
EG&G Idaho, Inc.  
Idaho Falls, Idaho 83415  
and  
Golder Associates, Inc.  
Redmond, Washington 98052

Prepared for EG&G Idaho, Inc.  
Under Subcontract No. C90-132739  
and for the  
U.S. Department of Energy  
Assistant Secretary for Environmental Restoration and Waste Management  
Under DOE Idaho Operations Office  
Contract DE-AC07-76ID01570

INEL COMPREHENSIVE WELL SURVEY

FITNESS-FOR-USE CHECKLIST POTABLE WATER/PRODUCTION WELL

LOCATION: PBF  
(Bldg. PBF 602)

PAGE 7 of 9

Well Name/No. SPERT-1  
(PBF 1)

D. WELL MUST COMPLY WITH "RECOMMENDED STANDARDS FOR WATER WORKS" (1992), A REPORT OF THE COMMITTEE OF THE GREAT LAKES-UPPER MISSISSIPPI RIVER BOARD OF STATE SANITARY ENGINEERS.

- 1) Does the well contain a packer that is in contact with the groundwater supply interval: (Yes ☐ No ☒ Insufficient Data ☐ N/A ☐). If yes, is the packer comprised of materials that are toxic, will impair taste or odor, or facilitate bacterial contamination of the well water: (Yes ☐ No ☐ Packer Type ☐ N/A ☒)
- 2) Screen
  - a) Does the well contain perforated casing or a screen: (Yes ☒ No ☐ Insufficient Data ☐ N/A ☐). If yes, the perforated screen or casing must be installed so that the pumping water level remains above it under operating conditions. The following determination was made from the available production water level data which will vary with changes in the static water levels (water table elevation); therefore, the following determination may not be valid under all conditions. Is the criterion met: (Yes ☐ No ☒ Insufficient Data ☐ N/A ☐). Explanation: The reported production water level was approximately 483 ft. bls., and the perforated casing was installed starting at 481 ft. bls, so the production water level was approximately 2 ft. below the initial perforations at the time the preceding production water level was taken.
  - b) Is the perforated casing or screen constructed of material resistant to damage by chemical action from the groundwater or cleaning operations: Material Type Steel Explanation: Steel is an acceptable well construction material for casing or screen in a non-acidic environment such as the Snake River Plain aquifer, as is demonstrated in EG&G report EGG-ER-8496.
- 3) If the casing is constructed of nonferrous material, it must be resistant to the corrosiveness of the water. Is this criterion met:  
(Yes ☐ No ☐ Insufficient Data ☐ N/A ☒)



Source: USGS Generalized Lithologic Log (Plate 15)

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Interval (feet below surface)

Begin	End	Description	Interval Thickness (ft)
0	5	Sand and Gravel	(ft)
5	25	Basalt	
25	37	Basalt and Clay	12
37	118	Basalt	
118	125	Basalt and Silt	7
125	265	Basalt	
265	290	Basalt and Silt	25
290	330	Basalt	
330	365	Basalt and Cinders	35
365	380	Basalt and Silt	15
380	410	Basalt and Cinders	30
410	420	Sand and Gravel	10
420	495	Basalt	water table = 483' 134
495	500	Basalt and Clay	
500	570	Basalt	
570	575	Basalt and Clay	
575	587	Basalt	
587	652.7	No Sample	

COMPILED BY/ORGANIZATION: T. Norton / GAI Date 2/11/93



## **ATTACHMENT 3**



TO: VAUGHN HALFORD  
FROM: ARTHUR P WILSON.

To VAUGHN HALFORD	From A.P. Wilson
Co. WAG 5	Co. E646 - PPF/WROC
Dep't. Phas. 6-6096	Phone # 5746
Fax # 6852	Fax # 6933

WROC / PBF AREA

TANK - 742 PER-601N OFFICE Building

TANK - 752 PER-612 Warehouse / Shower Facility / Lunch room.

Records show the leakage of fuel oil AT PER-601N + PER-612

PER-601N 4-19-93 AT end of Hunting Season. 878 gal Remain. in TANK.

10-1993 Ready for Hunting Season - Filled 557 gal to fill tank.

$$878 + 557 = 1435$$

(PBF-742)

Tank size - 1000

lost - = 435 over 6 mo ~ 72.5 gal/month during Summer.

PER-612 4-19-93 AT end of Hunting Season 1666 gal of fuel remain in tank.

10/93 Ready for Hunting Season. Filled 1662 gal to fill tank.

$$1666 + 1662 = 3328$$

(PBF-752)

Tank Size = 2000

Lost - = 1328 over 6 mo ~ 221 gal/month during Summer.

Note: NATIONAL WEATHER SERVICE Night Temp Between 2-18-94 and 4-15-94 <sup>avg</sup> 30°F.

PER-601N. Filled Tank on 2/8/94, on 4-19-94. Records Reveal of 351 gal remain on 646 gal used during a 2 month period on 323 gal/30 day = 10.8 gal/day @ 2.25 gpm  
(PBF-742) 4.785 gals Burn over 24 hr.

PER-612 Filled Tank on 2/18/94, on 4-19-94 Records Reveal of . 871 remain on 1129 gal used during a 2 month period on 564.5 gal/30 day = 18.8 gal/day . 4.5 gpm  
(PBF-752) 4.181 gals Burn over 24 hr.

